Ph.D. Project:
Prediction models for a Radio-Acoustical Virtual Environment

Le génie pour l'industrie

General Information

Research fields: Signal processing, machine learning, and speech science
Advisors: Dr Rachel Bouserhal <rachel.bouserhal@etsmtl.ca> and Prof. Pascal Giard <pascal.giard@etsmtl.ca>
Location: École de technologie supérieure, Montréal, Quebec, Canada
Starting date: Winter 2022 Semester

CRITIAS
NSERC-EERS INDUSTRIAL RESEARCH CHAIR IN IN-EAR TECHNOLOGY

1 Description

We are looking for a PhD candidate with expertise in signal processing, machine learning, and speech science to work on prediction models for a Radio-Acoustical Virtual Environment (RAVE). RAVE intends to mimic a natural acoustical environment by transmitting speech only to listeners within a specific radius. This radius will be predicted from the vocal effort of the speaker as well as the level of the ambient noise. The desired candidate will notably work on improving the current distance prediction model using various features of the wearer's speech.

2 Supervision and Funding

Supervision will be provided by Dr Rachel Bouserhal and Prof. Pascal Giard. Dr Bouserhal is a researcher at the Industrial Research Chair in In-Ear technologies (CRITIAS). Dr Bouserhal's research involves signal processing, communication in noise and machine learning for hearables. Dr Giard is a professor in the electrical engineering department of École de technologie supérieure (ÉTS). Professor Giard's research focuses on the efficient implementation of digital systems, from algorithm design to software and/or hardware implementation.

Funding is secured for 4 years (the expected duration of the Ph.D.).

3 Location

École de technologie supérieure is located in Montréal, Québec, Canada. Often described as an appealing blend of North American and European culture, Montréal is a safe, multicultural city, nice to live in, with an affordable cost of living. Since its inception in 2016, Montréal has constantly ranked as Quacquerilli Symonds' Best Student City in North America. Montréal is also recognized for its quality of life. Close to both peaceful rural beauty and exciting ski slopes, this dynamic city offers lively districts and many green spaces. Located in the heart of the city, the ÉTS campus is easily reached by bicycle or public transit.

Since its creation, ÉTS has pursued a mission that is deeply rooted in all its activities: To meet the needs of the industrial sector, which is in need of engineers who have not only a good theoretical background, but also practical knowledge. To fulfil this mission, ÉTS has a unique partnership with the business and industrial spheres that includes both small and large companies. It stands out from other universities in Quebec because of the applied training it offers students, as well as its research activities conducted by and for companies. Furthermore, this position is affiliated with the NSERC-EERS Industrial Research Chair in In-Ear technologies (CRITIAS) located at the Carrefour d'innovation INGO, which offers a unique and intimate relationship with the industrial partner EERS, located just across the hall.

4 Requirements

- Good oral and written communication skills
- Master's degree in electrical and/or computer engineering, or another relevant field
- Proficiency in signal processing
- Experience with machine learning is an asset
- Interest in speech science

5 How to Apply

Interested candidates should send their CV, university transcripts, contact information of suitable references, and a short statement (max. 1 page) describing how their experience is relevant to successfully carrying out this project.